

REMARKS

Claims 1, 2, 7 and 8 are pending in this application. By this Amendment, claims 1 and 2 are amended to incorporate the subject matter of claims 11 and 12, respectively, and to delete silica and silica-alumina from the list of possible acidic first carriers. The claims as amended define over the cited art as discussed more fully below.

No new matter is added by this Amendment. The subject matter added to claims 1 and 2 was previously recited in claims 11 and 12, respectively.

Entry of the amendments is proper under 37 CFR §1.116 since the amendments: (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration (since dependent claims 11 and 12 were previously considered); (c) do not present any additional claims without canceling a corresponding number of finally rejected claims; and (d) place the application in better form for appeal, should an appeal be necessary. The amendments are necessary and were not earlier presented because they are made in response to arguments raised in the final rejection. Entry of the amendments is thus respectfully requested.

Applicants appreciate the courtesies shown to Applicants' representative by Examiner Johnson in the February 25, 2005 interview. Applicants' separate record of the substance of the interview is incorporated into the following remarks.

I. Rejections Under 35 U.S.C. §102(b)

A. Relying Upon EP 1 004 347

Claims 1, 2, 7, 8, 13 and 14 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by EP 1 004 347 (hereinafter "EP 347"). This rejection is respectfully traversed.

By this Amendment, claims 1 and 2 are amended to include therein the additional limitations previously recited in dependent claims 11 and 12, respectively. Neither claim 11

nor claim 12 was rejected based upon the teachings of EP 347. Accordingly, amended claims 1 and 2 have overcome this rejection.

For at least the foregoing reasons, Applicants respectfully submit that EP 347 fails to teach or suggest the subject matter of claims 1 and 2, or of claims 7 and 8 dependent therefrom. Reconsideration and withdrawal of this rejection are respectfully requested.

B. Relying Upon EP 1 008 378

Claims 1, 2, 7, 8, 13 and 14 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by EP 1 008 378 (hereinafter "EP 378"). This rejection is respectfully traversed.

By this Amendment, claims 1 and 2 are amended to include therein the additional limitations previously recited in dependent claims 11 and 12, respectively. Neither claim 11 nor claim 12 was rejected based upon the teachings of EP 378. Accordingly, amended claims 1 and 2 have overcome this rejection.

For at least the foregoing reasons, Applicants respectfully submit that EP 378 fails to teach or suggest the subject matter of claims 1 and 2, or of claims 7 and 8 dependent therefrom. Reconsideration and withdrawal of this rejection are respectfully requested.

C. Relying Upon Suzuki et al.

Claims 1, 3 and 7 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 5,849,254 (Suzuki). This rejection is respectfully traversed.

By this Amendment, claim 1 is amended to include therein the additional limitations previously recited in dependent claim 11. Claim 11 was not rejected based upon the teachings of Suzuki. Accordingly, amended claim 1 has overcome this rejection.

For at least the foregoing reasons, Applicants respectfully submit that Suzuki fails to teach or suggest the subject matter of claim 1, or of claim 7 dependent therefrom. Reconsideration and withdrawal of this rejection are respectfully requested.

II. Rejections Under 35 U.S.C. §103(a)

A. Relying Upon EP 0 852 966

Claims 1, 2, 7, 8 and 11-14 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over EP 0 852 966 (hereinafter EP 966). This rejection is respectfully traversed.

EP 966 describes an exhaust gas purifying catalyst formed of a first powder comprising porous particles supporting rhodium and a second powder formed of porous particles supporting platinum and a nitrogen oxide adsorbing material. The second powder and the first powder are present in a mixed state. See the Abstract. Further, at page 8, lines 3-7, EP 966 describes that the support for the first powder may comprise silica, alumina, titania, zirconia (preferred), silica-alumina, or zeolite, and that the support for the second powder may comprise silica, alumina (preferred), titania, zirconia, silica-alumina or zeolite.

The Patent Office alleges that the first powder of EP 966 corresponds to the NO oxidation catalyst and that the second powder corresponds to the NO₂ decomposition catalyst. The Patent Office further alleges that because EP 966 mentions that the first powder support may include silica and silica-alumina, one would have found it obvious to have selected such a support. Applicants respectfully disagree.

Claims 1 and 2 have been amended to cancel recitation of the acidic first carrier of the NO oxidation catalyst as including silica or silica-alumina. Accordingly, this rejection is overcome.

Applicants further respectfully submit that EP 966 fails to teach or suggest the particulate matter combustion catalyst recited in claims 1 and 2 because EP 966 does not indicate that the catalyst is capable of dealing with particulate matter, for example, particulate matter emitted from a diesel engine. The presently claimed combustion catalyst is a particulate matter combustion catalyst specifically designed to deal with such particulate matter, and is able to efficiently effect combustion of such particulate matter at a high rate

even at temperatures below 300°C. Nowhere does EP 966 teach or suggest a particulate matter combustion catalyst comprised of the combination of NO oxidation catalyst and NO₂ decomposition catalyst as recited in each of claims 1 and 2 and having such capabilities.

For at least the foregoing reasons, Applicants respectfully submit that EP 966 fails to teach or suggest the presently claimed invention. Reconsideration and withdrawal of this rejection are respectfully requested.

B. EP 966 in view of EP 347

Claims 1, 2, 7, 8 and 11-14 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over EP 966 in view of EP 347. This rejection is respectfully traversed.

In claims 1 and 2, the particulate matter combustion catalyst is recited to comprise an NO oxidation catalyst and an NO₂ decomposition catalyst, wherein the NO oxidation catalyst comprises a catalyst component selected from the group consisting of platinum, gold, ruthenium, rhodium, iridium, palladium and mixtures thereof, carried on an acidic first carrier selected from the group consisting of zeolite with an SiO₂/Al₂O₃ ratio of 40 or greater, tungstic acid/zirconia, antimononic acid/alumina, and mixtures thereof.

The Patent Office relied upon EP 347 as allegedly suggesting the use of zeolite having a silica to alumina molar ratio of 40 or greater as a support for the first powder in EP 966.

Applicants respectfully submit that one of ordinary skill in the art would not have been led to have combined EP 347 with EP 966 in the manner alleged in the Office Action.

In the particulate matter combustion catalyst as defined in claims 1 and 2, the NO oxidation catalyst must be carried on an acidic first carrier. The effect of using an acidic first carrier is described on page 2, line 35 to page 3, line 35 and page 7, line 1 to page 8, line 4. Here, it is detailed that the NO oxidation catalyst carried on an acidic carrier is capable of notably accelerating the oxidation reaction of NO to NO₂. Consequently, a large amount of NO₂ is supplied from the NO oxidation catalyst, after which the decomposition catalyst

component produces active oxygen from the NO₂. This thus allows efficient supply of a large amount of active oxygen from the NO contained in the exhaust gas so that the particulate matter can be oxidized at a high rate even when the exhaust gas temperature is below approximately 300°C.

EP 966, on the other hand, does not teach or suggest the advantages of using an acidic carrier for the first powder. Rather, EP 966 describes a number of possible carriers for the first and second powders without regard to the acidity of the carriers.

EP 347 describes a catalyst comprising a supporting body, a first NO storage first functional layer, a second functional layer having a catalytic and hydrocarbon storing function. See the Abstract. It is described that the carrier for the second functional layer is preferably acidic. EP 347 would not have directed one of ordinary skill in the art to the particulate matter combustion catalyst defined in claims 1 and 2 for several reasons.

First, although EP 347 describes that the carrier for the second functional layer may be acidic, this functional layer is not described to be an NO oxidation catalyst as in present claims 1 and 2 and the first powder of EP 966. In fact, it is specifically indicated at column 8, lines 21-29 of corresponding U.S. Patent No. 6,677,264 that the second functional layer must only minimally oxidize NO. Because of this, and the fact that EP 966 does not teach a preference for acidic or non-acidic carriers for an NO oxidation catalyst, one of ordinary skill in the art would not have extracted the acidic carrier of EP 347 for use as a first powder support in EP 966.

During the interview, the Examiner reiterated her position that the function of the catalysts (i.e., as NO oxidation or NO₂ decomposition catalysts) was not relevant to patentability. However, with respect to the issue of motivation to combine the references, it is very relevant. The Examiner has alleged that EP 966's first powder is an NO oxidation catalyst. As such, one of ordinary skill in the art looking for appropriate carriers would have

sought carriers for such a catalyst. As the EP 347 zeolite carrier is specifically taught not to be used with an NO oxidation catalyst as discussed above, one of ordinary skill in the art clearly would not have looked to select such a carrier for use with the first powder of EP 966.

Second, in addition to the foregoing, it must also be noted that EP 347 describes many acidic carriers, including many zeolites in which some have a silica to alumina ratio as low as 20 and some have higher silica to alumina ratios. Nothing in EP 347 directs one to use only a zeolite having a silica to alumina ratio of at least 40 as an acidic carrier at all, much less as a carrier for an NO oxidation catalyst. The selection of zeolite having only silica to alumina ratios of at least 40 from EP 347 is clearly based solely on improper hindsight.

Third, EP 347 describes a catalyst for purifying exhaust gases in which two separate functional layers are superposed together upon the same inert supporting body. The particulate matter combustion catalyst of claims 1 and 2, however, requires that the NO oxidation catalyst and the NO₂ decomposition be carried upon separate carriers comprised of separate materials, wherein the NO oxidation catalyst and the NO₂ decomposition catalyst are separate powders present in a randomly mixed state. Nowhere does EP 347 teach or suggest a catalyst material in which these two distinct types of catalysts are carried upon different carriers. In view of this, one of ordinary skill in the art would not have turned to the teachings of EP 347 for selection of any carriers for use in the different catalyst system described in EP 966.

Applicants also respectfully submit that even if the teachings of these references were to have been combined, the presently claimed invention still would not have been achieved. In particular, as was discussed above, neither EP 966 nor EP 347 teach or suggest a particulate matter combustion catalyst that is comprised of the NO oxidation catalyst of the defined components in combination with the NO₂ decomposition catalyst of the defined components in a randomly mixed state of separate catalysts.

For at least the foregoing reasons, Applicants respectfully submit that nothing in either EP 966 or EP 347 would have led one of ordinary skill in the art to the presently claimed invention. Reconsideration and withdrawal of this rejection are respectfully requested.

III. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 2, 7 and 8 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



James A. Oliff
Registration No. 27,075

Christopher W. Brown
Registration No. 38,025

JAO:CWB/wp

Date: February 28, 2005

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

<p>DEPOSIT ACCOUNT USE AUTHORIZATION Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 15-0461</p>
--